

# *New Jersey Maritime Resources*

## *The Use of Sediment Decontamination Technologies for the Management of Navigational Dredged Materials*

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# PORT OF NEW YORK AND NEW JERSEY

- 15 Million People
- Largest Port on East Coast
- Largest Petroleum Port
- Naturally Shallow, 250 miles of engineered waterways
- 4-7 mcy/year dredging
- Oldest Industrialized Watershed
- 2-4 mcy/year contaminated sediment



# *Regional Dredged Materials Management Plan (DMMP)*

- Reduce Need to Dredge
- Reduce Contamination
- Beneficially use as much as possible
- Dispose of only what cannot be used



# *Beneficially use as much as possible*

## ■ Options

- Construction Aggregate/Beach Replenishment
- Fill Material
- Capping Material
- Remediation Material (HARS)

## ■ Economics (\$5/cyd - \$47/cyd)

## ■ Health and Safety

## ■ Capacity and Throughput





# *Sediment Decontamination*



# *Decontamination Program Goals*

- Decontamination vs. stabilization
- Cost competitive with alternatives (\$29/cy)
- Match dredging throughput (5,000 cy/day)
- Moderate to high capacity (500K cy/yr)
- Produces value-added product
- Unlimited capacity as needed



# *Sediment Decontamination Program for the NY/NJ Harbor*

- EPA/WRDA Bench Scale Testing
- Port Authority Matrix
- WRDA Pilot Program
- OMR Pilot Program
- \$40 million in Federal and State resources, combined with private investment



# *Decontamination Technologies*

- NUI Environmental~Chemical Oxidation; Manufactured Soil
- BEM Systems~Georemediation®; Manufactured Soil
- ENDESCO Clean Harbors~Rotary Kiln; Blended Cement
- JCI/Upcycle~Rotary Kiln; Lightweight Aggregate
- BGW~Biogenesis® Sediment Washing; Manufactured Soil





# *NUI Environmental Group*

- 800 gallon pilot
- Chemical oxidation with  $\text{KMnO}_4$  and super-ionized water
- Erie Street site, Elizabeth, NJ
- Production of base for manufactured soil product
- Pilot completed, report in review

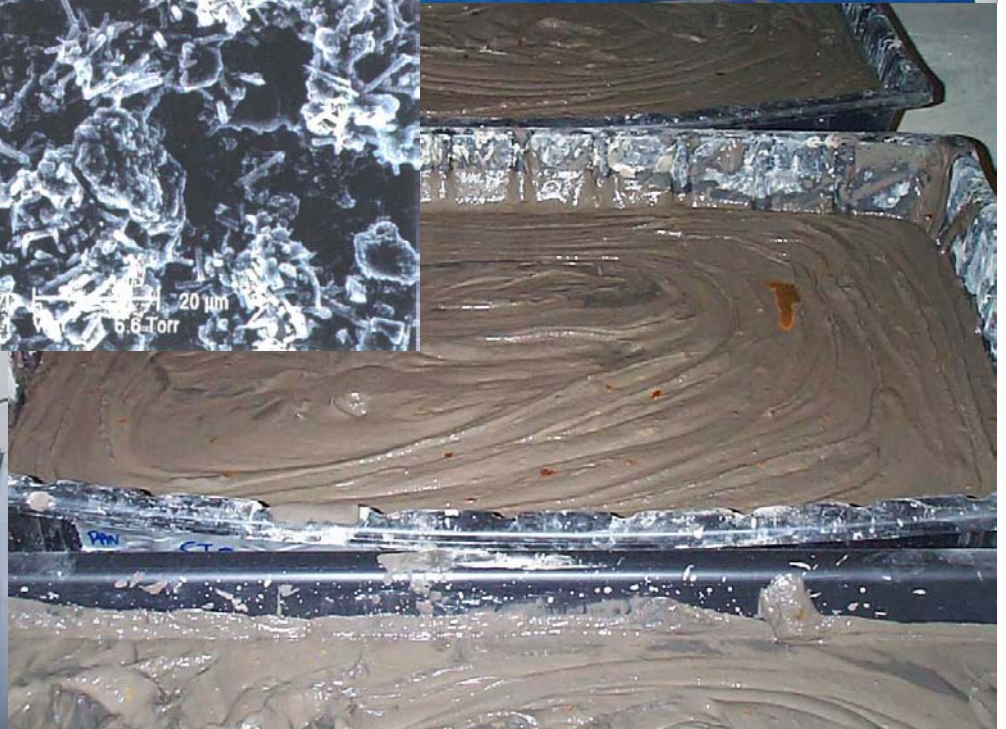
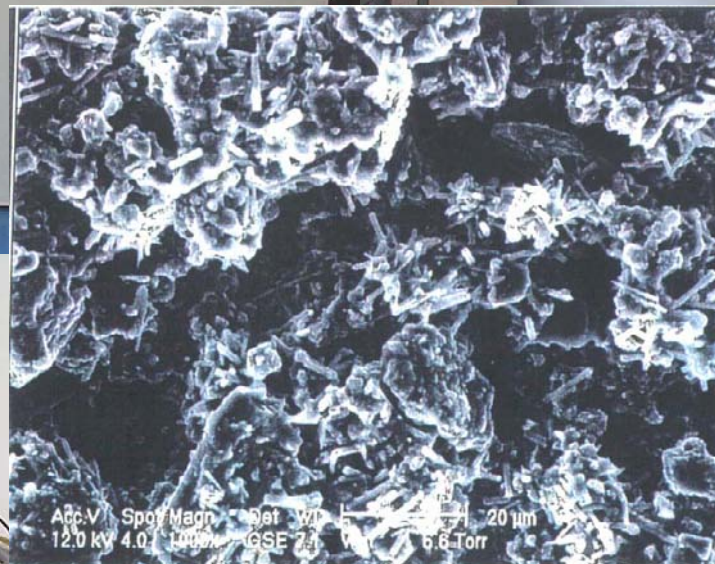


# *BEM Systems, Inc.*

- 600 gallon pilot
- Georemediation (oxidation and enhanced mineralization)
- Rutgers Civil Engineering Dept.
- Production of manufactured soil product
- Pilot completed, report in preparation



# *BEM Systems, Inc*





# *ENDESCO/Clean Harbors*

- Can handle very contaminated materials
- Kiln, not incinerator (2500° F)
- Must meet strict emission requirements
- Produces “Ecomelt” for blended cement
- 300 ton pilot about to be initiated
- De-watered material from Upcycle pilot
- IMTT site in Bayonne, NJ



# ENDESCO/Clean Harbors





# *Upcycle Associates, LLC*

- Two-part pilot
  - Belt press dewatering at Stratus (500cy)
  - Fuller Test Kiln in Bethlehem, PA (4cy)
- Produced lightweight aggregate for construction
- Meets all regulatory and engineering criteria



# *Upcycle Associates*



# *BioGenesis/Montgomery Watson*

- Production of manufactured soil products
- Winter/Spring 1999 successful pilot
- BASF site in Kearny, NJ
- 250,000 cyd/yr plant
- 20,000 cyd demonstration
- 55,000 cyd full scale





# *BioGenesis Pilot Project - 1999*



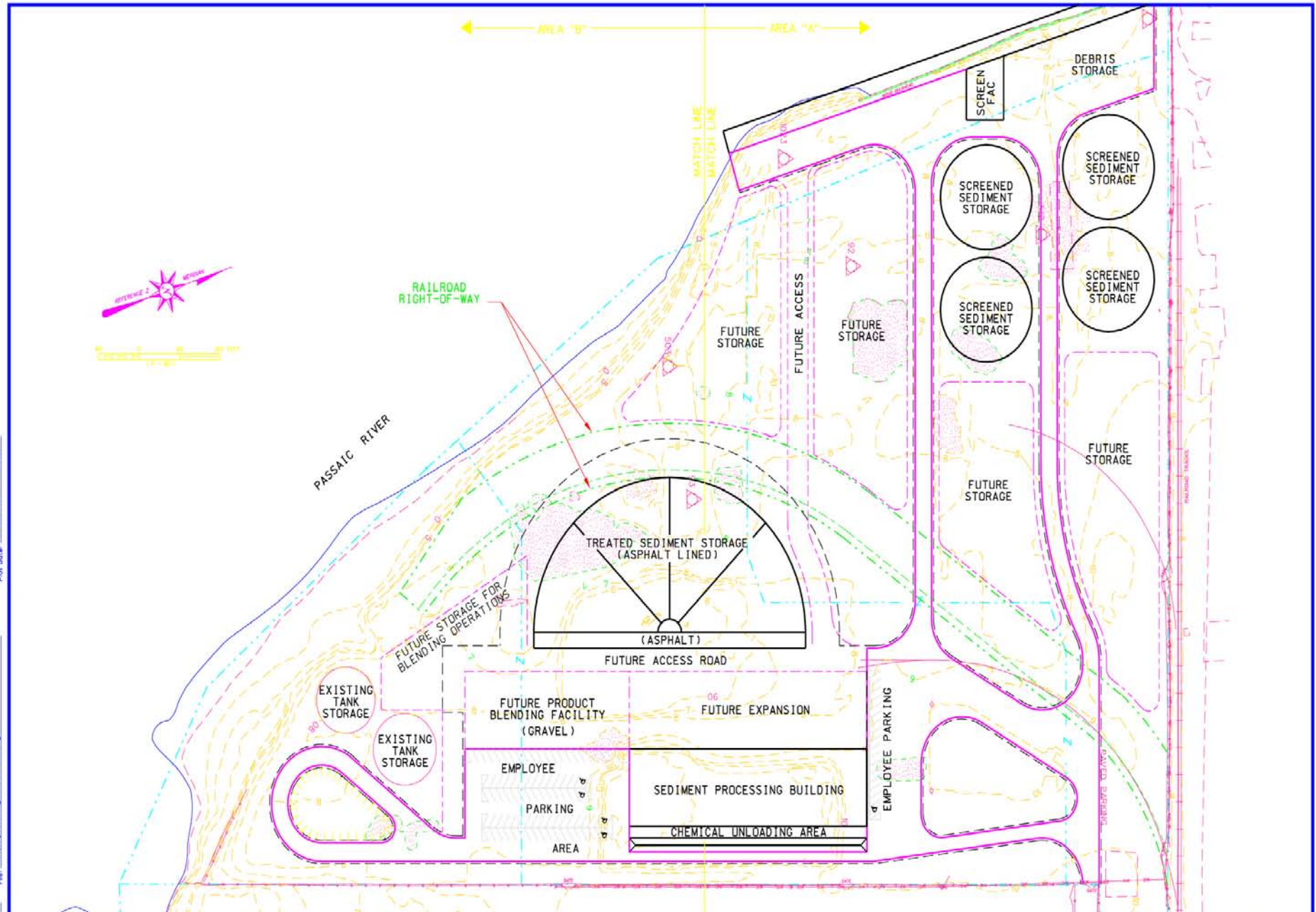
# *BioGenesis Soil Washing System*







*BASF Site, Kearny, NJ*



# BioGenesis Site Plan

# *Success Criteria*

- Produce product that meets environmental criteria for intended use
- Cost competitive
- Ability to process or store up to 5,000 cyd/day to support current dredging operations
- Annual plant capacity of 500,000 cyd/yr



# *Public Outreach*

- Not where we work, play or pray
- WRDA/Rutgers Educational Outreach
- Public Comment on Acceptable Use Determinations
- Public Comment through NEPA process
- Case-by-case outreach as needed



# *Looking to the Future: Environmental Dredging*

- “Hot” Channels (Passaic River and Gowanus Canal)
- Off channel hot spots (outfalls and depositional areas)
- Mass Removal
- Economic Restoration
- Environmental Restoration







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